RECEIVED
CENTRAL FAX CENTER
OCT 01 2010

IN THE CLAIMS:

1. (Currently Amended) A sensor device for detecting a change in the level of fluid within tissue of a body, the sensor device comprising:

a housing having a plurality of bridge segments, the bridge segments connecting at intersections and being arranged to circumscribe an opening defined by the housing; and

a plurality of antenna elements at least partially seated within the housing at intersections of the bridge segments, each of the plurality of antenna elements comprising a generally planar antenna mounted to a substrate material at a base of the planar antenna, an outer surface of the planar antenna facing away from the substrate, each of the plurality of antenna elements further comprising an electrical shield surrounding the substrate,

wherein the each of the plurality of antenna elements comprises at least a first antenna element pair and a second antenna element pair, the first antenna element pair comprising a first transmitting antenna element and a first receiving antenna element, the second antenna element pair comprising a second transmitting antenna element and a second receiving antenna element,

wherein the first antenna element pair and the second antenna element pair are spaced from each other to create an area of reduced sensitivity between the first antenna element pair and the second antenna element pair.

2. (Original) The sensor device of claim 1 further comprising an RF cable assembly for each of the antenna elements, each of the RF cable assemblies at one end thereof comprising a connector and at the other end thereof being electrically connected to the antenna element corresponding thereto.

3. (Original) The sensor device of claim 1 further comprising at least one flexible circuit board assembly for transmission of energy to and from the antenna elements.

4. (Original) The sensor device of claim 3 wherein the flexible circuit board comprises at least one splitter such that electromagnetic energy can be transmitted to at least two of the plurality of antenna elements using a single transmission trace within the flexible circuit board.

5. (Original) The sensor device of claim 3 wherein the flexible circuit board comprises at least one combiner such that electromagnetic energy can be received from at least two of the plurality of antenna elements and carried by a single transmission trace within the flexible circuit board.

6. (Original) The sensor device of claim 1 further comprising an attachment mechanism to operably attach the sensor device to the tissue of the body, the attachment mechanism comprising:

an adhesive portion defining a cutout region generally coextensive with the opening of the housing, the adhesive portion having one side thereof coated with a

first adhesive adapted to removably attach to the tissue and an opposite side thereof coated with a second adhesive adapted to attach to a bottom surface of the housing.

7. (Original) The sensor device of claim 6 wherein the attachment mechanism further comprises a release band affixed to a perimeter of the adhesive portion.

8. (Original) The sensor device of claim 7 wherein the first adhesive provides less adhesion than the second adhesive.

9. (Canceled) The sensor device of claim 1 wherein the each of the plurality of antenna elements comprises at least a first antenna element pair and a second antenna element pair, the first antenna element pair comprising a first transmitting antenna element and a first receiving antenna element, the second antenna element pair comprising a second transmitting antenna element and a second receiving antenna element.

10. (Canceled) The sensor device of claim 9 wherein the first antenna element pair and the second antenna element pair are spaced from each other to create an area of reduced sensitivity between the first antenna element pair and the second antenna element pair.

11. (Currently Amended) The sensor device of claim [10] 1 wherein the space between the first antenna element pair and the second antenna element pair is set so that the sensor is insensitive to fluid changes of a predetermined volume within the area of reduce[s]d sensitivity.

12. (Original) The sensor device of claim 1 wherein a first area of higher sensitivity is defined by the area between the first transmitting antenna element and the first receiving antenna element and a second area of higher sensitivity is defined by the area between the second transmitting antenna element and the second receiving antenna element.

13. (Currently Amended) A sensor for detecting a change in the level of fluid within tissue of a body, comprising:

a first antenna pair comprising a first transmitting antenna and a first receiving antenna, the first transmitting antenna being spaced from and connected to the first receiving antenna by a first bridging segment; and

at least a second antenna pair comprising a second transmitting antenna and a second receiving antenna, the second transmitting antenna being spaced from and connected to the second receiving antenna by a second bridging segment[;],

the first antenna pair and the second antenna pair being placed in spaced connection by a first spacing segment and a second spacing segment so that an open area is defined by the first antenna pair, the second antenna pair, the first spacing segment and the second spacing segment,

wherein the first spacing segment connects the housing section of the first transmitting antenna to the housing section of the second transmitting antenna and the second spacing segment connects the housing section of the first receiving antenna to the housing section of the second receiving antenna,

wherein the first spacing segment and the second spacing segment space the first antenna pair and the second antenna pair to create an area of reduced sensitivity between the first antenna pair and the second antenna pair.

14. (Original) The sensor of claim 13 wherein each antenna element is surrounded by a housing section, each of the antenna elements comprising a substrate mounted within the housing section and a generally planar antenna element mounted to the substrate.

15. (Canceled) The sensor of claim 14 wherein the first bridging segment connects the housing section of the first transmitting antenna to the housing section of the first receiving antenna and the second bridging segment connects the housing section of the second transmitting antenna to the housing section of the second receiving antenna.

16. (Canceled) The sensor of claim 15 wherein the first spacing segment connects the housing section of the first transmitting antenna to the housing section of the second transmitting antenna and the second spacing segment connects the housing section of the first receiving antenna to the housing section of the second receiving antenna.

17. (Canceled) The sensor of claim 13 wherein the first spacing segment and the second spacing segment space the first antenna pair and the second antenna pair to create an area of reduced sensitivity between the first antenna pair and the second antenna pair.

18. (Currently Amended) The sensor of claim 13[17] wherein the space between the first antenna pair and the second element pair is set so that the sensor is insensitive to fluid changes of a predetermined volume within the area of reduce[s]d sensitivity.

19. (Original) The sensor device of claim 18 wherein a first area of higher sensitivity is defined by the area between the first transmitting antenna and the first receiving antenna and a second area of higher sensitivity is defined by the area between the second transmitting antenna and the second receiving antenna.

20. (Original) The sensor device of claim 13 further comprising an RF cable assembly for each of the antennae, each of the RF cable assemblies at one end thereof comprising a connector and at the other end thereof being electrically connected to the antenna corresponding thereto.

21. (Original) The sensor device of claim 13 further comprising at least one flexible circuit board assembly for transmission of energy to and from the antennae.

22. (Original) The sensor device of claim 21 wherein the flexible circuit board comprises at least one splitter such that electromagnetic energy can be transmitted to the first transmitting antenna and the second transmitting antenna using a single transmission trace within the flexible circuit board.

23. (Original) The sensor device of claim 21 wherein the flexible circuit board comprises at least one combiner such that electromagnetic energy can be received

from the first receiving antenna and the second receiving antenna and carried by a single transmission trace within the flexible circuit board.

24. (Original) The sensor of claim 13 further comprising an attachment mechanism to operably attach the sensor to the tissue of the body, the attachment mechanism comprising:

an adhesive portion defining a cutout region generally coextensive with the open area, the adhesive portion having one side thereof coated with a first adhesive adapted to removably attach to the tissue and an opposite side thereof coated with a second adhesive adapted to attach to the sensor

25. (Original) The sensor of claim 24 wherein the attachment mechanism further comprises a release band affixed to a perimeter of the adhesive portion, the release band being generally free of adhesive.

26. (Withdrawn) A system for wirelessly communicating a change in the level of fluid within tissue of a body, the system comprising:

a sensor device for detecting a change in the level of fluid within the tissue;

a transmitter in operative connection with the sensor device for receiving therefrom a signal indicative of the change in the level of fluid within the tissue and for transmitting a wireless signal indicative of the change in level of fluid; and

a remote receiver for receiving the wireless signal transmitted by the transmitter.

27. (Withdrawn) The system of claim 25 wherein the remote receiver comprises an indicator to provide an alert of a state determined from the received wireless signal.

28. (Withdrawn) The system of claim 25 wherein the sensor device comprises:

a housing having a plurality of bridge segments, the bridge segments connecting at intersections and being arranged to circumscribe an opening defined by the housing; and

a plurality of antenna elements at least partially seated within the housing at intersections of the bridge segments, each of the plurality of antenna elements comprising a generally planar antenna mounted to a substrate material at a base of the planar antenna, an outer surface of the planar antenna facing away from the substrate, each of the plurality of antenna elements further comprising an electrical shield surrounding the substrate.

29. (Withdrawn) A system of claim 25 wherein the sensor device comprises:

a first antenna pair comprising a first transmitting antenna and a first receiving antenna, the first transmitting antenna being spaced from and connected to the first receiving antenna by a first bridging segment;

at least a second antenna pair comprising a second transmitting antenna and a second receiving antenna, the second transmitting antenna being spaced from and connected to the second receiving antenna by a second bridging segment;

the first antenna pair and the second antenna pair being placed in spaced connection by a first spacing segment and a second spacing segment so that an open area is defined by the first antenna pair, the second antenna pair, the first spacing segment and the second spacing segment.

30. (Withdrawn) A system of claim 25 wherein the sensor device comprises:

a first antenna pair comprising a first transmitting antenna and a first receiving antenna, the first transmitting antenna being spaced from and connected to the first receiving antenna by a first bridging segment;

at least a second antenna pair comprising a second transmitting antenna and a second receiving antenna, the second transmitting antenna being spaced from and connected to the second receiving antenna by a second bridging segment;

wherein the first antenna pair is spaced from the second antenna pair by at least one spacing segment so that an area of reduced sensitivity is created in the space between the first antenna pair and the second antenna pair.

31. (Withdrawn) The system of claim 25 wherein the sensor device further comprises an attachment mechanism to operably attach the sensor device to the tissue of the body, the attachment mechanism comprising:

an adhesive portion defining a cutout region generally coextensive with the open area, the adhesive portion having one side thereof coated with a first adhesive adapted to removably attach to the tissue and an opposite side thereof coated with a second adhesive adapted to attach to the sensor device.

32. (Withdrawn) The sensor of claim 31 wherein the attachment mechanism further comprises a release band affixed to a perimeter of the adhesive portion, the release band being generally free of adhesive.

33. (Withdrawn) The system of claim 32 wherein said first adhesive provides less adhesion than said second adhesive.

34. (Withdrawn) An attachment mechanism for use in attaching a sensing device to the skin of a patient, comprising:

an adhesive portion having a first side coated with a first adhesive adapted to removably attach to the skin and a second side, opposite the first side and coated with a second adhesive adapted to attach to the sensing device; and

a release band affixed to a perimeter of the adhesive portion to facilitate removal of the attachment mechanism from attachment to the skin.

35. (Withdrawn) The attachment mechanism of claim 34 wherein the adhesive portion defines a cutout region generally coextensive with an opening defined by the sensing device.

36. (Withdrawn) The attachment mechanism of claim 34 wherein the first adhesive provides less adhesion than said second adhesive.

37. (Withdrawn) A method of sensing a change in fluid level in living tissue in a patient, comprising:

placing a first antenna pair in contact with the patient, the first antenna pair comprising a first transmitting antenna and a first receiving antenna,

placing a second antenna pair in contact with the patient, the second antenna pair comprising a second transmitting antenna and a second receiving antenna,

the first antenna pair and the second antenna pair being spaced when in contact with the patient to create an area of reduced sensitivity between the first antenna pair and the second antenna pair.

38. (Withdrawn) The method of claim 37 wherein the space between the first antenna pair and the second antenna pair is set so that a sensor device comprising the first antenna pair and the second antenna pair is insensitive to fluid changes of a predetermined volume within the area of reduced sensitivity.

39. (Withdrawn) The method of claim 38 wherein a first area of higher sensitivity is defined by the area between the first transmitting antenna and the first receiving antenna and a second area of higher sensitivity is defined by the area between the second transmitting antenna and the second receiving antenna.

40. (Withdrawn) A method of sensing an extravasation of fluid being injected into living tissue of a patient, comprising:

placing a first antenna pair in contact with the patient, the first antenna pair comprising a first transmitting antenna and a first receiving antenna,

placing a second antenna pair in contact with the patient, the second antenna pair comprising a second transmitting antenna and a second receiving antenna,

transmitting electromagnetic energy in the frequency range of approximately 300 MHz to approximately 30 GHz via the first transmitting antenna and the second transmitting antenna;

measuring resultant signals from the first receiving antenna and the second receiving antenna; and

comparing the signals to a reference to determine if fluid level in the tissue has changed during the period of time,

the first antenna pair and the second antenna pair being spaced when in contact with the patient to create an area of reduced sensitivity between the first antenna pair and the second antenna pair.

41. (Withdrawn) The method of claim 40 wherein the space between the first antenna pair and the second antenna pair is set so that a sensor device comprising the first antenna pair and the second antenna pair is insensitive to extravasations of a predetermined volume within the area of reduced sensitivity.

42. (Withdrawn) The method of claim 41 wherein a first area of higher sensitivity is defined by the area between the first transmitting antenna and the first receiving antenna and a second area of higher sensitivity is defined by the area between the second transmitting antenna and the second receiving antenna.

43. (Withdrawn) The method of claim 40 wherein the frequency is in the range of approximately 1 GHz to approximately 10 GHz.

44. (Withdrawn) The method of claim 40 wherein the frequency is in the range of approximately 3 GHz to approximately 5 GHz.

45. (Withdrawn) The method of claim 41 wherein the sensor device comprises a housing that maintains the first antenna pair and the second antenna pair in spaced connection.

46. (Withdrawn) The method of claim 41 wherein each antenna of the first antenna pair and the second antenna pair comprises a generally planar antenna mounted to a substrate material at a base of the planar antenna, an outer surface of the planar antenna facing away from the substrate, each of the plurality of antenna elements further comprising an electrical shield surrounding the substrate.

47. (Withdrawn) The method of claim 46 wherein the electrical shied comprises a rearward section adjacent a rearward side of the substrate, side shields encompassing sides of the substrate and a forward section adjacent a forward side of the substrate and extending inward from the side shields, a margin being maintained between the planar antenna and the forward section.

48. (Withdrawn) The sensor device of claim 1 wherein the electrical shied comprises a rearward section adjacent a rearward side of the substrate, side shields encompassing sides of the substrate and a forward section adjacent a forward side of the substrate and extending inward from the side shields, a margin being maintained between the planar antenna and the forward section.